



Energy

Solutions for Conventional Energy

Conventional Energy

Solutions for



Power plants and substations

Generator sets

Large and heavy industries

Commercial buildings

Residential buildings

ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is a multinational electronics group active in the design, manufacture and marketing of electronic equipment targeted at the global markets of industrial and building automation.

Our history is full of firsts and our products are installed in a huge number of applications all over the world.

More than 80 years of successful operation, our experience is unparalleled.

We have our headquarters in Europe and numerous offices around the world.

Our R&D competence centres and production sites are located in Denmark, Italy, Lithuania, Malta and the People's Republic of China.

We operate worldwide through 22 of our own sales companies and also selected representatives in more than 65 countries, from the United States in the West to the Pacific Rim in the East.

Our core competence in automation spans five product lines : Sense, Switch, Control, Fieldbus and EcoEnergy equipment.

Our wide array of products includes sensors, monitoring relays, timers, solid-state relays, electronic motor controllers, energy management

equipment, fieldbus systems and components for renewable energy.

We focus our expertise on offering state-of-the-art product solutions in selected market segments.

Our customers include original equipment manufacturers of packaging machines, plastic-injection moulding machines, food and beverage production machines, conveying and materials handling equipment, door and entrance control systems, lifts and escalators, as well as heating, ventilation and air-conditioning devices.



DESIGNED TO MARKET REQUIREMENTS

Energy has always been a crucial element of human life, economic growth and technological progress. Until recently, its reserves have seemed endless. Today this is no longer the case. To achieve the objectives of better provision and use of energy it is fundamental to meet the needs of today, optimizing them without compromising the ability of future generations to satisfy their own needs.

More and more the best use of resources, power control and reduction and optimization of consumptions are playing a decisive role in contemporary geopolitics and industrial development.

Therefore a well considered use of energy from different sources is not only possible, but absolutely necessary.

Carlo Gavazzi is one of the first companies to deal with this, providing a complete series of instruments to measure and analyze the power distributed across the network and to predict and calculate the related energy consumption. We provide comprehensive solutions for energy monitoring, metering and management, utilising many years experience and multinational expertise.

Carlo Gavazzi products for applications in the conventional energy market comprise energy meters, power quality and energy analysers, current-voltage-frequency monitoring relays, digital panel meters, timers and current

transformers. The range is completed with energy monitoring systems. The accurate measurement of energy consumption (by MID certified energy meters) provides billing information for operators who are sub-billing the energy. The energy analysers help the operators to identify consumption trends and take corrective action. The power quality analysis improves the on site efficiency and eases negotiation with utility companies.

Without doubt Carlo Gavazzi makes a major contribution to optimizing energy use in residential and commercial buildings and in all kinds of industries and infrastructures, improving efficiency, saving costs and reducing CO₂ emissions.

Conventional Energy

Power plants and substations



Multifunction meters

WM10
WM12
WM14

Energy analysers

EM26

Power transducers

CPT-DIN
PQTH

Power quality analysers

WM30
WM40
WM5

Carlo Gavazzi offers solutions for any size of power plant. In the case of mini- or micro-hydroelectric systems, a full control solution is available using our wide power analyser range, while the mechanical variables can be monitored by relays and digital panel meters. The most basic plants are equipped with a monitoring

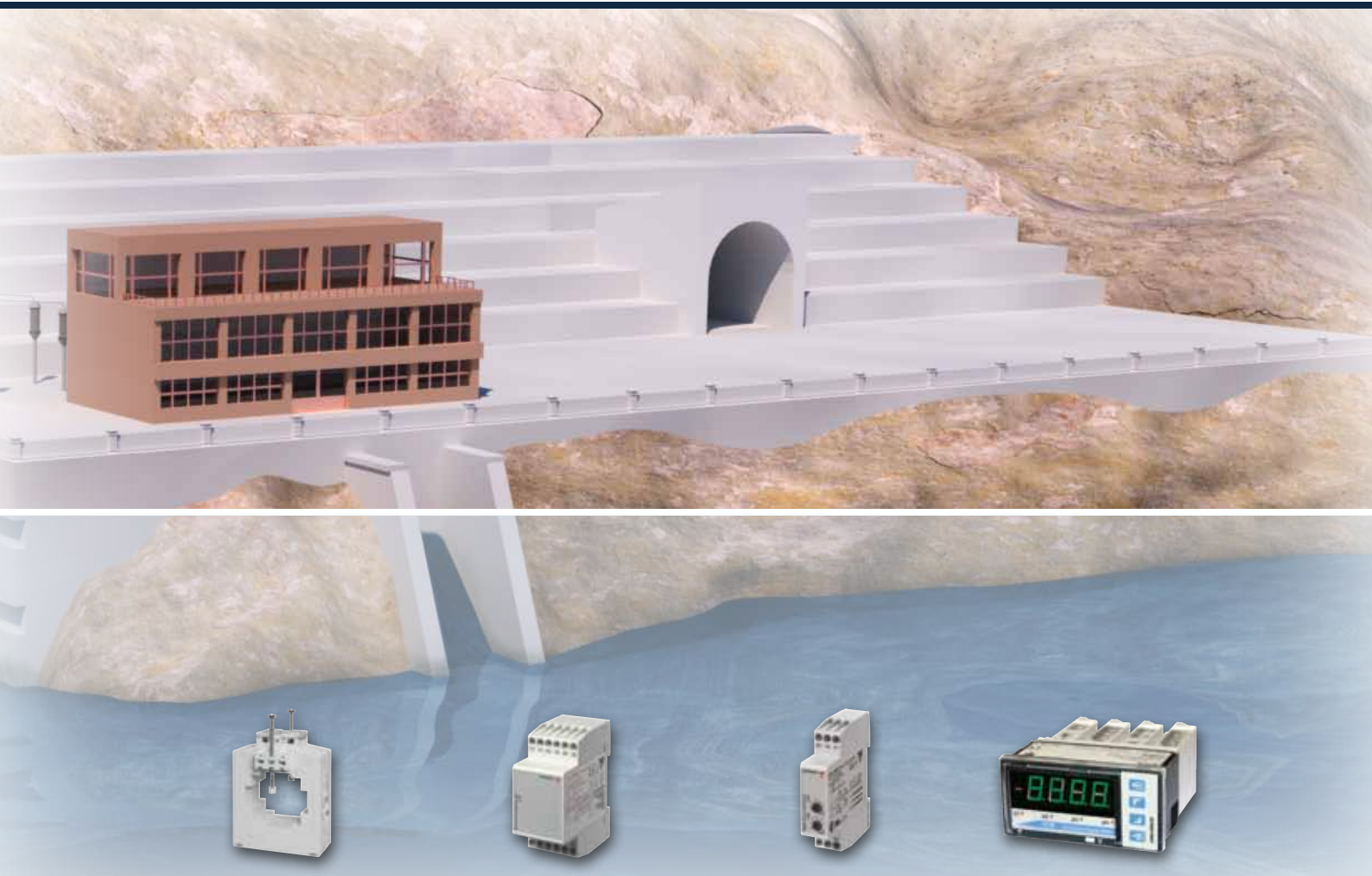
relay, such as the DPC02, which controls both the voltage and the frequency levels, at the same time. The more advanced plants add the monitoring of the alternator temperature by means of the DTA01 or DTA02 and of the reservoir water level by means of the DLA71, which can control the water acting on the pumps or on the motors

of the floodgates to empty them or fill them to the right level. The shaft rotation speed can be monitored, displayed and serially retransmitted to a supervisor system (PLC or SCADA) by using the UDM60, the new modular digital panel meter for tachometer measurements.

The water flow or any other process variables can also be monitored and displayed, correctly scaled in the original engineering unit, by means of the UDM40, belonging to the same DPM family.

When the plant is privately owned, the production needs to be measured by a certified meter, in order to be correctly paid by the public grid authorities. EM26 with MID approval is the right solution and can be connected to the same serial bus of the





Current transformers

CTD/TADK

Monitoring relays

**DLA71
DTA/PTA 01/02
DPC02/DPC72**

Timers

**HAA
DAA/DMB**

Digital panel meters

**UDM40
UDM60
USC**

above-mentioned control devices in order to allow complete remote-plant supervision. Medium and large power plants (hydro, thermal, nuclear), as well as substations, are controlled by sophisticated DCS's whose electrical input data (relevant to the different systems composing the whole plant) can be provided by Carlo Gavazzi power quality analysers, such as the WM30, WM40 or WM5, via the serial port by using the Modbus RTU or TCP protocol, or through an OPC server. If communication is interrupted for any reason, the WM40 can, if required, be equipped with a datalogger module, allowing the system to recover the missing information. The flexible and comprehensive ability of these instruments to manage the information and convert

them into alarms or warnings - thanks to their PLC-like AND/OR logic - allows money and space to be saved, as all the features of any additional components are implemented in our hardware. When dealing with single distribution-gear, control-gear or switch-gear (present not only in generation facilities but also in

production sites and other infrastructures) whereas in the past 3 analogue ammeters and a voltmeter (whose input was selected by a rotary switch) were used, the target is to replace these with a single multifunction meter or more high-performing digital instrumentation. This results in the saving of both space and money.



Conventional Energy

Generator sets



Multifunction meters	Energy meters/ analyser	Power transducer	Power quality analysers	Monitoring relays	Timers	Digital panel meters
WM12 WM14	EM2172R EM24 EM26	CPT-DIN	WM3 WM30 WM40	DWA01/DFC DTA/PTA 01/02 DPC02/DPC72	HAA DAA/DMB FAA/FMB	UDM40 UDM60

Generator sets must offer reliability, low maintenance and long life wherever they are installed: construction sites, infrastructures, industries, agriculture. In generator sets it is necessary to measure, display and control all the main variables relevant to the power produced, including harmonic distortion. The "Advanced" version of the 3-phase power analyser WM14 and of the correspondent transducer model CPT-DIN, are the optimum for this application. The PLC-type alarm control on 16 variables allows the anomalies to be divided into two groups: critical problems (phase loss, under-voltage, frequency, with OR logic) can automatically lead to the disconnection

of the generator set, with a horn or lamp warning; non-priority anomalies can be transmitted to the supervisor system via the serial port. The WM14 and CPT "Advanced" give the possibility of counting the generation hours and to monitor different parameters (from the current to harmonic distortion), also storing the peak and valley values. The most critical gen-set applications need an even more sophisticated control system: the modular power quality analysers carry out this task perfectly, also with data-logging capabilities in the case of the WM40. The simplest generators can be monitored by temperature, frequency, and/or voltage relays while co-generation systems feeding the

public grid need an interface protection, capable of disconnecting the generator from the grid in case of mismatching of the main electrical parameters. The interface protection relay is approved according to National standards when required, as per our monitoring relay types DPC02 and DPC72.



Large and heavy industries



Energy analysers

Power transducers

Power quality analysers

Monitoring relays

Timers

Dupline® controller

Digital panel meters

**EM4 DUPLINE
EM26**

**CPT-DIN
PQTH**

**WM22
WM3/WM5
WM30/WM40**

**DPA53
DPB51
DIA/DIB**

**DAA/DMB
FAA/FMB**

G3800xx

**UDM40
UDM60
USC**

In the large and heavy industry markets, as well as in airports, or other large installations, it is important to have a powerful control of the mains, since medium voltage systems and high currents are involved. Because of the type of loads, a low content of harmonics is crucial to allow the installation to work in a correct and

reliable way. The solution proposed by Carlo Gavazzi involves two modular series of power quality analysers, which can be tailored according to the requirements, offering many I/O combinations with PLC-like AND/OR logic, serial, Ethernet, or optical ports, different protocols (such as Modbus, BACNet or Ethernet/IP), integrated data logger, harmonic analysis and multi-tariff management. All this can be integrated into any SCADA or BMS system or managed by our monitoring solution, VMU-C EM: it allows all the installation parameters to be monitored and controlled by a local or remote (via e-mail or SMS) warning to the maintenance staff. By means of its logging and analysis functions, the operator is able to program

ordinary maintenance or to introduce an extraordinary one. Nowadays all the manufacturing companies need to have a cost control system in their production sites. Cost allocation program can be achieved by using energy analysers such as the EM26-96, which provides all the data of individual departments.

Cost and consumption forecasts are also available in a very user friendly way using VMU-C EM.

Carlo Gavazzi meters and analysers can be used in combination with the Dupline® fieldbus, achieving the ideal solution in very noisy industrial plants, by exploiting the robustness of the Dupline® bus when compared with the traditional serial communication buses.



Conventional Energy

Commercial buildings



Multifunction meters

WM10
WM12
WM14

MID energy meters

EM2172D
EM23
EM33

MID energy analysers

EM24
EM24 DUPLINE
EM26

Web server

VMU-C EM
VMU-W

Dupline® decentral I/O

BDBxx
BDAxx
SHPxx

Dupline® sensors

BSQ-PIR360
BSH-LUX

BACnet building controller

SB2WEB24

Deregulation in the energy market and the constant increase in electrical energy costs have led to a fast growing demand for fiscal metering. A flat rate of energy consumption for each shop in a shopping mall, or for each tenant in a residential building, has become unacceptable: either the provider or



the user could lose money, so both of them require a "certified" value of energy used. In 2006 the European Union released a Measuring Instrument Directive (called MID), involving a number of metering issues, ranging from energy to water, from taximeters to exhaust gas meters.

The scope of this directive was to guarantee to the users a high level of safety and reliability in the measuring instruments, protected against data corruption, whilst at the same time ensuring the free circulation of certified measuring instruments within the EU.

For years Carlo Gavazzi has been providing a whole range of MID-certified energy meters, for all

requirements in any 1-phase or 3-phase application, either by direct current measurement or by current transformers.

These range from the simple, compact single phase EM10 and EM11 up to the advanced EM24 and EM26 for 3-phase systems.

Carlo Gavazzi is one of the first energy meter manufacturers having an internal MID-approved Test Laboratory, from which the instruments are supplied, certified and sealed, ready for the installation.

All the data can be aggregated and therefore analysed and shared among the tenants using the new web-server solution for energy management, VMU-C EM.

Residential buildings



MID energy meters

**EM10/11
EM23
EM33**

Energy meters

**EM2172R
EM2172V**

Power and energy analysers

**WM22 DUPLINE
EM24 DUPLINE
EM26**

Web server

**VMU-C EM
VMU-W**

Current transformers

**CTV
CTD/TADK
MI/MP**

Timers

**DBA52
FAA/FMB**

Smart-House controller

SH2WEB24

In new constructions, it is absolutely essential to achieve maximum energy efficiency and to avoid situations where a load (a fan, a light or a heating system) is supplied in an unused area.

This is also the goal of building automation systems: for this reason Carlo Gavazzi offers its energy management products also the Dupline® field- and installation-together with the smart-house system as a unique control solution capable of transmitting multiple digital and analog signals over long distances via the Dupline® 2-wire bus.

The Smart-House controller connects to Carlo Gavazzi energy meters via Modbus RS485, and Dupline pulse count input modules are also available as a general solution for interfacing to meters measuring

consumption of energy, water, gas, heat etc. However, it is a completely different situation when dealing with old buildings which are completely lacking in building automation or in monitoring systems. In this case the best and cheapest solution is retrofitting the various switch gears with the implementation of an energy measuring system, specifically developed, such as the EM21-72R and EM21-72V "Retrofit" versions. By using these energy meters, it is possible to obtain the current measurement simply by installing the split-core current sensors (included in EM21-72R) onto the wires, without disconnecting them or switching off the mains. The meter can be mounted in any type of panel frames, being extremely compact and suitable both for panel mounting (72x72mm) and for

DIN-rail mounting (only 4-DIN modules). This is possible by means of the patented detachable display, utilising the transponder technology. The EM21 "Retrofit" is also easy to install thanks to the wrong phase-sequence warning and the short programming procedure.



Conventional Energy

Our product range

Web Server



VMU-C EM

- Micro PC with Web-server and Web service capability
- Data and event logging capability
- Internal 4GB memory and 16GB SDHC card back-up memory
- Variables shown as graphs and numbers in formatted tables
- All data exports on HTML format compatible with Excel or other spread sheets
- Management up to 32 Energy Meters and 11 remote I/O module groups

MAIN FEATURES

- Energy analysis of each single load
- Energy bill evaluation
- Virtual main meter
- Alarms control with automatic e-mailing and SMS management

Compact mobile modem



VMU-W

- Internet access point when regular wired network is not available
- Mobile modem: GSM, GPRS, EDGE, UMTS, HSPA
- Dimensions: 2 DIN modules

MAIN FEATURES

- Suitable for use in combination with VMU-C
- Automatic dual or quad band setting (850-900 Mhz, 1800-1900/2100 Mhz)

Multifunction meter



WM10

- 3-phase multifunction meter with direct connection
- Direct connection up to 65 A
- Dimensions 4-DIN rail module housings
- Accuracy 0,5%
- Display 3 variables at a time

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Measurement of both system and single phase variables
- Easy installation: no parameters programming needed

Multifunction meters



WM12/14

- Dimensions 6-DIN rail module or 96x96mm panel mounting housings
- 3-phase multifunction indicator (WM12) or analyser (WM14)
- Accuracy 0.5 % (voltage, current)
- Front protection degree IP65, NEMA4X, NEMA12

MAIN FEATURES

- Available models from as a simple indicator up to an advance analyser
- Allows the serial re-transmission of the main parameters to a PLC for full control of the system
- Suitable for DIN-rail or panel mounting

Energy meters



EM10 DIN / EM11 DIN

- Single-phase energy meters with direct connection
- Current input up to 32 A
- 1 DIN module dimension
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector output

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Suitable to measure generated energy
- MID Annex D certification available

Energy meter



EM2172D

- 3-phase energy meters with CT connection
- Solid or split-core 5A CT
- Dimensions 4-DIN rail module or 72x72 mm housing
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector or serial RS485 output

MAIN FEATURES

- Very compact and space saving meter
- The same meter can be installed both on DIN-rail or on the panel
- On request, MID annex D certification available

Energy meter for retrofit



EM2172R

- 3-phase energy meters with CT connection
- Split-core current sensors included
- Dimensions 4-DIN rail module or 72x72 mm housing
- Class 2 (kWh) accuracy
- Pulse open collector or serial RS485 output

MAIN FEATURES

- Very compact and space saving meter
- The same meter can be installed both on DIN-rail or on the panel
- Available as a kit including 3 split-core current sensors (90, 150 or 250 A)

Energy meter for retrofit



EM2172V

- 3-phase energy meters with CT connection
- Solid or split-core 0.333V current sensors
- Dimensions 4-DIN rail module or 72x72 mm housing
- Class 1 (kWh) equivalent to EN62053-1
- Pulse open collector or serial RS485 output

MAIN FEATURES

- Very compact and space saving meter
- The same meter can be installed both on DIN-rail or on the panel
- Suitable for any standard 0.333V current sensor or for CTV series

Our product range

Energy meters



EM23/EM33

- 3-phase energy meter with direct connection
- Direct connection up to 32A (EM33) or 65A (EM23)
- Dimensions 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Serial RS485 or open collector (EM23) output

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Allows local energy allocation for cost allocation purposes
- On request, MID annex D certification available

Energy analysers



EM24 / EM24 DUPLINE®

- 3-phase energy meter with direct connection
- Direct connection up to 65 A
- Dimensions 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Optional serial port, digital input and outputs

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Allows integration of energy management in the Dupline® fieldbus system
- On request, MID annex D certification available
- Dupline® port for energy and inst. variable retransmission (optional)

Energy analyser



EM26 96

- 3-phase energy meters with CT/VT connection
- Primary current input: 5 A
- 96 x 96 mm housing dimensions, only 45 mm behind the panel
- Class 1 (kWh) acc. to EN62053-1
- Modbus communication port

MAIN FEATURES

- Energy analyser in a very compact housing to save space
- Suitable to measure generated and consumed energy
- MID Annex D certification available

Power analysers



WM22/EM4

- Dimensions 9-DIN rail module housings
- Accuracy 0.5 % (voltage, current)
- Direct current connection (100A) or CT
- Front protection degree IP40
- THD measurement (WM22)

MAIN FEATURES

- Direct measurement up to 100 A to save money for the CT's
- Dupline® module for pulse retransmission over Dupline® fieldbus
- Allows local energy allocation for cost allocation purposes

Smart modular power analyser



WM3

- Dimensions 96x96mm panel mounting housing
- Accuracy 0.5 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- Single harmonic analysis

MAIN FEATURES

- Easy-to-use power quality analyser with graphical display
- Modular housing to build the instrument according to the real application needs
- Modbus RS485 and RS232 and N2 Metasys ports available

Smart modular power analyser



WM30

- Dimensions 96x96mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved; Solar California listed

MAIN FEATURES

- Provides installation data to a SCADA to manage the whole system
- Modular housing to build the instrument according to the real application needs
- Modbus and BACNet (both RS485 or Ethernet), and Ethernet/IP communication port available

Smart modular power analyser



WM40

- Dimensions 96x96mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved; Solar California listed

MAIN FEATURES

- 16-alarm PLC logic and digital inputs for utility metering
- Modular housing to build the instrument according to the real application needs
- Modbus and BACNet (both RS485 or Ethernet), and Ethernet/IP communication port available
- Built-in datalogger for instantaneous variables, dmd profiles and events

Smart modular power analysers



WM5/PQTH

- Dimensions 96x96mm panel mount (WM5); 90x90mm DIN-rail mount. (PQTH)
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved, Measurement Canada certified (WM5)

MAIN FEATURES

- 16-alarm PLC logic, digital inputs for utility metering , 12 tariffs, event data stamping
- Modular housing to build the instrument according to the real application needs
- Modbus RS485 and Ethernet communication ports available

Conventional Energy

Our product range

Power transducer	Current transformers	Current sensors	Current transformers
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CPT

- Dimensions 83.5x45x98.5mm DIN-rail housing
- Accuracy 0.5 % (voltage, current)
- Measurement by CT and VT
- Front protection degree IP20
- Analogue, digital, pulse or serial outputs available

MAIN FEATURES

- Very compact size power transducer
- Provides electrical variables set to a PLC to manage compressors and other loads
- Suitable for on-board panel installation



CTD / TADK

- CTD: currents from 40 to 4000 A
TADK2: 1-250 A
- Removable panel fixing clips
- DIN-rail and panel mounting facility (TAD...)
- Double screw terminals (CTD)
- Sealable covers
- Case: ABS, self-extinguishing level UL 94 V-0
- Accuracy class: 0.5

MAIN FEATURES

- Wound primary / solid core or split-core
- Compliance with IEC 60185, VDE 0414-1 regulations
- Removable DIN-rail mounting holder



CTV

- Split-core current sensors
- Primary currents: 60 to 800 A
- Secondary output: 0.333V AC
- Accuracy class: 1
- CE, cURus approved

MAIN FEATURES

- Very compact split-core sensors ideal for retrofit applications
- Suitable for use with EM21-72V energy meter



MI/MP

- Current transformers for monitoring relays
- 1-phase (MI) or 3-phase (MP)
- 0.4 to 4 Vp output
- 5 to 500 A primary ranges available

MAIN FEATURES

- Compact CT for CG current, power, power factor monitoring relay
- Output proportional to the highest of the 3 currents (MP)
- Extended frequency range (40 Hz to 1 kHz)

Monitoring relay	Monitoring relay	Monitoring relay	Interface protection
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DPA51

- Dimensions 81x17,5x67,2mm DIN-rail housing
- Phase sequence and loss relay
- 3 phase AC (own power supply); regenerated voltage
- Power supply from 208 to 480 VAC
- CE, UL, CSA and CCC approved

MAIN FEATURES

- Compressor protection from reverse running and phase loss
- 17.5 mm width: the smallest in the market
- Plug and play: no settings needed



DPA53

- Dimensions 81x17,5x67,2mm DIN-rail housing
- Phase sequence, loss and undervoltage relay
- 3 phase AC (own power supply)
- Power supply from 208 to 480 VAC (2 models)
- UL, CSA and CCC approved

MAIN FEATURES

- Motor protection from reverse running and wrong phase voltage
- 17.5 mm width: the smallest in the market
- Plug and play: only undervoltage threshold to be set



DPB51

- Dimensions 81x17,5x67,2mm DIN-rail housing
- TRMS 3-phase over/under voltage, phase sequence and loss relay
- 3 phase AC (own power supply)
- Power supply from 208 to 480 VAC
- UL and CSA approved

MAIN FEATURES

- Detects the phase-phase or phase-neutral voltage
- 17.5 mm width: the smallest in the market
- Independent voltage setpoints and built-in delays



DPC02

- Dimensions: 45 x 80 x 99.5 mm
- DIN-rail mounting
- Power: 208 to 240 VAC or 380 to 415 VAC
- Protection degree: IP20
- Output: programmable relays 2 SPDT N.E. or 1 DPDT N.E.

MAIN FEATURES

- One-phase and three-phase relays for monitoring maximum and minimum voltage and frequency, phase sequence and phase failure. It checks that frequency and voltage are within the limits set by the energy supplier

Our product range

Interface protection



DPC72

- Dimensions: 90 x 71 x 65 mm, 4-DIN mod.
- DIN rail mounting – sealable housing
- Values and intervention time programming
- Serial port RS485 Modbus RTU
- Protection degree: IP50
- Output: 1 DPDT N.E.

MAIN FEATURES

- One-phase and three-phase relays for monitoring maximum and minimum voltage and frequency, phase sequence and phase failure. It checks that frequency and voltage are within the limits set by the energy supplier
- Record of the last 10 events (date, time and reason for the event)

Monitoring relays



DIA/DIB

- Dimensions 80x22.5x99.5mm DIN-rail housing
- Over or under current relay
- 1 phase AC or DC
- Power supply from 24 to 48 VAC/DC or 115/230 VAC
- UL and CSA approved

MAIN FEATURES

- Detects any variation of the desired current level
- Direct connection, by CT or by external shunt
- Latch and inhibit functions, TRMS measurement (DIB)

Monitoring relay



DWA01

- Dimensions 83x22.5x99.5mm DIN-rail housing
- Cos phi monitoring relays
- 3 phase AC (own power supply)
- Power supply from 208 to 240 VAC or from 380 to 480 VAC
- UL and CSA approved

MAIN FEATURES

- Detects any potentially dangerous change of the cos phi
- Direct current connection or by CT
- Easy setup

Monitoring relays



DFB/DFC

- Dimensions 80x22.5x99.5mm DIN-rail housing
- Over or under frequency relay
- 1 phase, 50 or 60 Hz
- Measuring range from 24 to 240 VAC
- UL and CSA approved

MAIN FEATURES

- Detects any variation of the frequency
- 2 Hz or 10 Hz selectable alarm window
- 2 independent delays and SPDT out (DFC)

Monitoring relays



DTA/PTA 01/02

- Dimensions 22.5 mm Euronorm for DIN-rail or 36 mm plug-in version
- Motor temperature relay
- Measuring ranges: PTC according to EN 44081
- Power supply: 24 to 48 VAC/DC, 110, 230 VAC
- UL, CSA approved

MAIN FEATURES

- Protection from high temperatures of the coils of a motor with built-in PTC's.
- Alarm resettable by external contactor or reset button
- Test button allowing the simulation of the fault condition

Monitoring relay



DLA71

- Dimensions 81x35,5x67,2mm DIN-rail housing
- Pump alternating relay for 2 or 3 pumps
- Galvanically separated power supply, 24/48 or 115/230 VAC
- 2x or 3x 5A SPST output
- UL and CSA approved

MAIN FEATURES

- Built-in function for automatic rotation of the pumps
- Built-in delay for the second or third pump in case of simultaneous activation is required
- Built-in function for automatic rotation of the pumps

Timers



DAA51, DMB51

- Dimensions 81x17,5x67,2mm DIN-rail housing
- Delay on operate function (DAA), multifunction (DMB)
- Combined AC and DC power supply
- Repeatability: < 0.2%
- UL, CSA, RINA approved

MAIN FEATURES

- Delay on operate/release; interval (manual/automatic start);
- Double interval; symmetrical recycler (ON or OFF first)
- Timing range from 0.1s to 100h

Timer



DBA52

- Dimensions 81x17,5x67,2mm DIN-rail housing
- Delay on release function
- Power supply 24VDC or from 24 to 240 VAC
- Repeatability: < 0.2%
- UL and CSA approved

MAIN FEATURES

- Extended delay-on-release time, selectable from 0.1 s to 100 h
- 5A SPDT relay

Conventional Energy

Our product range

Timer	BACnet building controller	Smart-House controller	Dupline® decentral I/O
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HAA

- 21.5 x 28 mm housing for 8-pin or 14-pin blade socket
- Multifunction timer with 4 functions
- DPDT or 4PDT output
- Universal power supply
- CUR and CSA approved

MAIN FEATURES

- Front knob adjustable time setting
- Selectable time ranges from 0.1s to 100h
- Delay on operate, symmetrical recycle, ON or OFF first interval



SB2WEB24

- BACnet gateway
- Can drive up to seven Dupline® 2 wire networks 7 functions
- Connects directly to energy meters via Modbus RS485 †
- Dimension: 2-DIN housing

MAIN FEATURES

- Connects to BACnet/IP via the built-in ethernet port (
- SB2WEB24 automatically converts signals/values from energy meters and Dupline into BACnet objects



SH2WEB24

- Home automation functions and energy data logging configurable by software
- Modbus RS485 port for connecting to energy meters
- Dimension: 2-DIN housing

MAIN FEATURES

- Connects to BACnet/IP via the built-in ethernet port (SB2WEB24)
- Data logging of signals and energy values
- Web-server user interface for monitoring of energy consumption



SHPINV324/SHPINV2T1P124

- Dupline® analog input module
- 3 x 0-10 VDC inputs (SHPINV324)
- 2 x 0-10 VDC + 1 x 10K3 thermistor + 1-11K variable resistor (SHPINV2T1P124)
- 1.5-30 VDC powered
- Small dimension housing for de-central installation in wall-boxes etc.

MAIN FEATURES

- Interface for environmental sensors like CO2, humidity, temperature
- De-central installation at the position of the sensor
- Easy and fast installation with 4-wire bus (Dupline® + power)
- Cost effective

Dupline® decentral I/O	Dupline® decentral I/O	Dupline® decentral I/O	Dupline® sensor
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SHPINT1P1

- Dupline® analog input module
- 1 x 10K3 thermistor input
- 1 x 1-11K variable resistor input
- Bus-powered
- Small dimension housing for de-central installation in wall-boxes etc.

MAIN FEATURES

- Interface for temperature transducers / set-point adjustment
- De-central installation at the position of the transducer
- Easy and fast installation with Dupline 2-wire bus
- Cost effective



BDA-RE13A-U

- Dupline® relay module
- 1 x 16A relay output
- Inrush current: Up to 130A
- Bus-powered
- Small dimension housing for de-central installation in wall-boxes etc.

MAIN FEATURES

- De-central relay for installation at the position of the load
- Easy and fast installation with Dupline® 2-wire bus
- High inrush current suitable for lighting loads
- Cost effective



BDA-INCONx-U

- Dupline® input module
- 4 or 8 x contact inputs
- Bus-powered
- Small dimension housing for de-central installation in wall-boxes etc.

MAIN FEATURES

- De-central interface for light switches
- De-central interface for doors and windows contacts
- Easy and fast installation with Dupline® 2-wire bus
- Cost effective



BSQ-PIR360-U

- Dupline® passive infrared detector
- Detection angle: 360°
- Operating distance: 2.5 – 4.0 m
- Ceiling mount or Euro-box

MAIN FEATURES

- Detects presence of people in rooms
- Can be used for energy saving by switching not needed loads of (lighting, heating etc)
- Easy and fast installation with Dupline® 2-wire bus
- Cost effective

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